

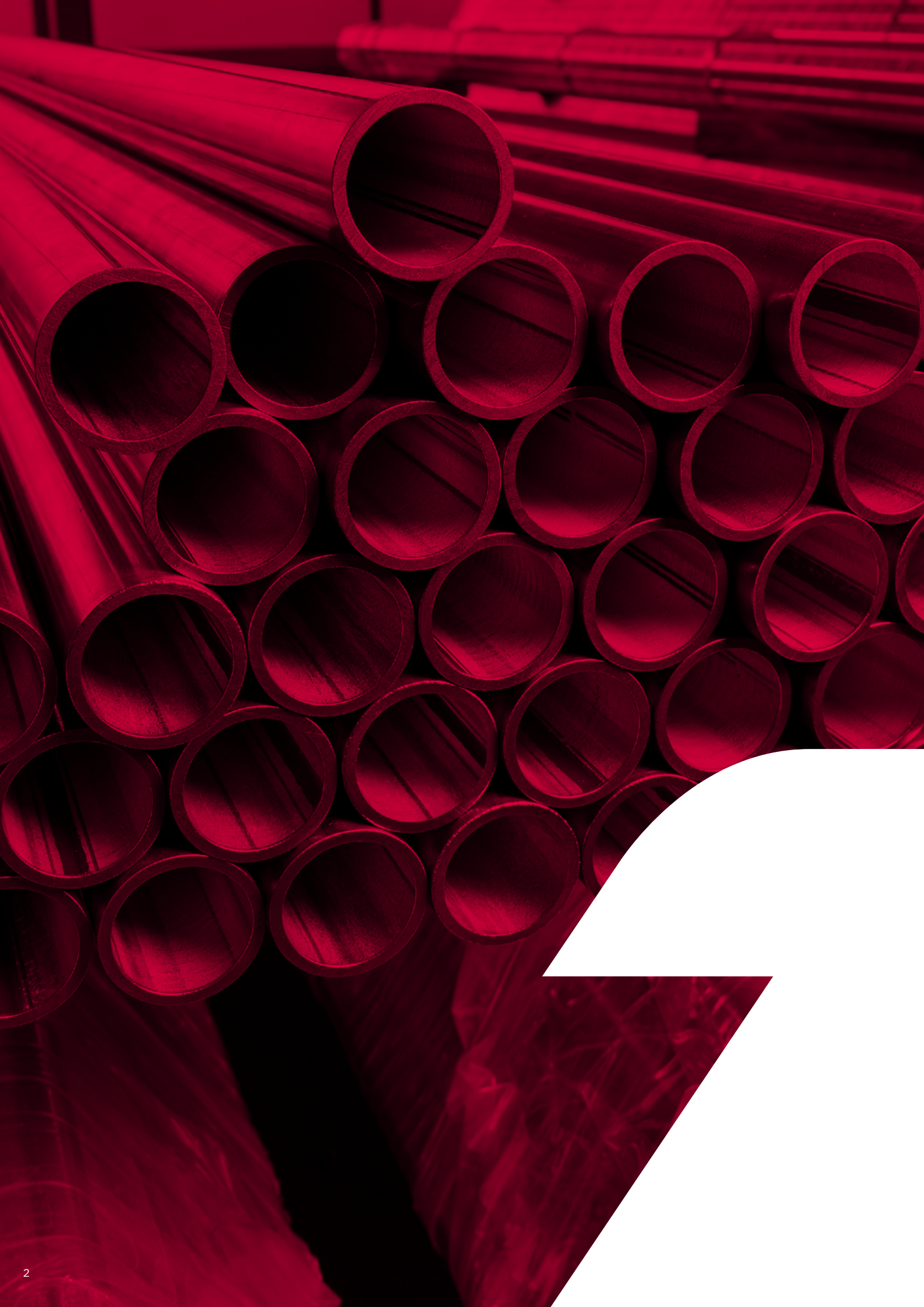


integrated  
piping systems

## VSH CoolPress









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Aalberts integrated piping systems

don't just buy  
products,  
buy solutions.



piping technology



# we are Aalberts integrated piping systems

Aalberts integrated piping systems engineers the most advanced integrated piping systems for the distribution and control of liquids and gases for key verticals, like industrial, utilities, commercial and residential. We offer fully integrated piping systems in valve, connection, fastening and piping technology. We work hand-in-hand with our customers to create the perfect integrated piping system, that meets their requirements. Our piping systems are easy to specify, install, control and maintain, saving important preparation and installation time. We meet the highest quality and industry standards needed in the selected verticals. We are the only business that truly offers its customers a single sourced and complete integrated piping solution, each and every time.

**Don't just buy products, buy solutions.**

## our mission

With our integrated piping systems, supported by our unique Digital Design Service, we ensure that you will always get the best and easiest solution for the installation of an integrated piping system. From the moment that your plan is designed, you can get advice on complete and tailored solutions. With our Revit Plug-in you have digital access to the complete product offering within Aalberts integrated piping systems. This information is always accessible and up to date, allowing the design of an optimal and economically attractive installation that will meet all your demands. So whether the task is project conception, installation, or ongoing maintenance, we are the company that truly delivers a complete system and service offering. Our know-how, our can-do attitude, and our relentless innovation come as standard. We will sweat the small stuff in our quest to find the perfect solutions, even if we have to invent them.

**This is how we deliver excellence.**

## our way of working

We operate from various regions around the globe: America, EMEA and APAC. As we have multiple locations in many countries, we are always close to our customers. More than 3500 mission critical employees are persistent to offer the best integrated piping system. We work on our products, solutions and services every day. No matter how big the opportunity is, when we say we've got this, we won't let go until there is nothing left to learn. We improve ourselves by exchanging knowledge and experience to stay ahead of our competitors.

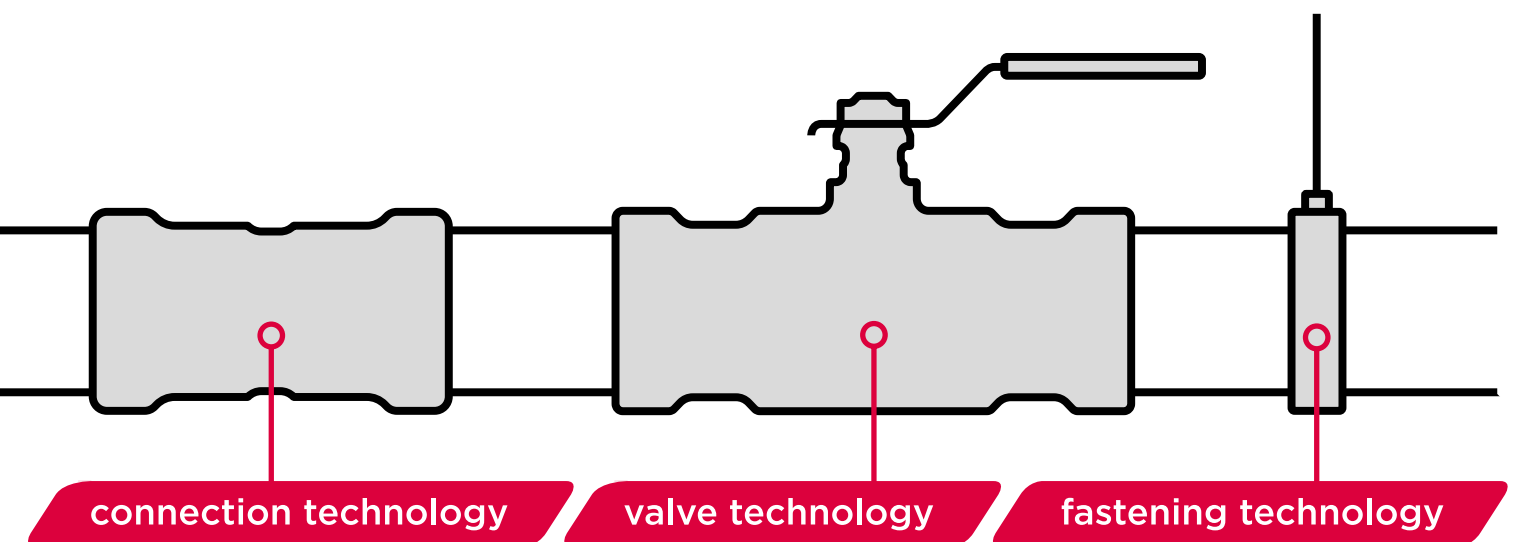
**Good is never good enough.**

With our sustainable spirit we contribute to circularity every single day. This belief is strongly linked to the way we do business. Rethink, reduce and recycle. We are entrepreneurial and take ownership in everything we do. We are convinced that self-development and diversity is essential.

**The Aalberts way, winning with people.**

## the strength of Aalberts integrated piping systems

- the perfect solution for every project
- smart, fast and efficient installation
- valuable advice from the drawing board to delivery
- a very wide product range



# our easy to connect product lines

Aalberts integrated piping systems is the combination of different companies with individual, well-known brands. Together they offer the best integrated piping system for now and in the future.

## our product lines

We offer product ranges that:

- connect seamlessly
- are available in dimensions from 6 mm up to 104" (DN2600)
- can be used for thick-walled pipe and thin-walled metal or plastic tube
- have press, compression, groove and push connections
- can be expanded with valves and accessories
- are BIM ready

### connection technology

**VSH** delivers piping systems throughout the world for over 90 years. In the 1970's VSH brought the well-known VSH Super compression fitting on the market. Nowadays the range consists of various press, compression and push systems for thin and thick walled metal as well as plastic.

**Shurjoint** history dates back to 1974 when they produced their first grooved couplings, produced from malleable iron. Shurjoint is recognized as a world leader in the design and manufacture of mechanical piping components.

### valve technology

**Pegler** is a globally respected brand known for high-quality plumbing, heating, and engineering products. Since the 1890s, its reputation has been built on innovation, quality and strong customer service. Today, Pegler is still a key player in the valve industry, continuously designing new valve solutions.

### fastening technology

The **FastFix** fastening range consists of brackets, rails and accessories for secure and efficient mounting. Designed for practical use across various applications, our products combine reliability with ease of installation. Whether for industrial setups or everyday solutions, we help you build with confidence.

### FastFix



new!

|              |   |
|--------------|---|
| material     | mild carbon steel / stainless steel                         |
| finishes     | zinc plated / hot dip galvanised                            |
| suitable for | all types of piping systems                                 |
| connection   | ¼" - 16" (DN8 - DN400)                                      |
| options      | with or without sound-absorbing insert & thermal insulation |

### VSH CoolPress



new!

|              |                          |
|--------------|--------------------------|
| material     | copper                   |
| suitable for | copper                   |
| connection   | press / specific profile |
| Abmessungen  | ¼" - 1½" (DN8 - DN35)    |

### VSH PowerPress®



|              |                       |
|--------------|-----------------------|
| material     | carbon steel          |
| suitable for | thick-walled steel    |
| connection   | press / DW-profile    |
| dimensions   | ½" - 2" (DN15 - DN50) |

### VSH SudoPress



|              |   |
|--------------|---|
| material     | carbon steel / stainless steel / copper |
| suitable for | carbon steel / stainless steel / copper |
| connection   | press / V-profile                       |
| dimensions   | 12 - 108 mm (DN10 - DN100)              |

### VSH Shurjoint



|              |   |
|--------------|---|
| material     | ductile iron / stainless steel              |
| suitable for | thick-walled steel / stainless steel / HDPE |
| connection   | groove                                      |
| dimensions   | ½" - 104" (DN15 - DN2600)                   |

### VSH Super



|              |   |
|--------------|---|
| material     | brass   |
| suitable for | carbon steel / stainless steel / copper / plastic |
| connection   | compression                                       |
| dimensions   | 6 - 54 mm (DN4 - DN50)                            |

### VSH SmartPress



|              |                                   |
|--------------|-----------------------------------|
| material     | stainless steel                   |
| suitable for | stainless steel (schedule 5S/10S) |
| connection   | press / V-profile (ASP)           |
| dimensions   | ½" - 2" (DN15 - DN50)             |

### Pegler Valves



|              |   |
|--------------|---|
| material     | brass / bronze / carbon steel / stainless steel |
| suitable for | steel / carbon steel / stainless steel / copper |
| connection   | threaded / press / push / flange                |
| dimensions   | ½" - 12" (DN15 - DN300)                         |

### Pegler ProFlow



|              |   |
|--------------|---|
| material     | brass / ductile iron                              |
| suitable for | carbon steel / stainless steel / copper / plastic |
| connection   | threaded / press / flange                         |
| dimensions   | ½" - 12" (DN15 - DN300)                           |

### Seppelfricke



|              |   |
|--------------|---|
| material     | brass   |
| suitable for | steel / carbon steel / stainless steel / copper |
| connection   | press (V & M profile) / threaded                |
| dimensions   | 10 - 54 mm (DN8 - DN50)                         |

### VSH XPress



|              |  |
|--------------|--|
| material     | carbon steel / stainless steel / copper / unifer |
| suitable for | carbon steel / stainless steel / copper / unifer |
| connection   | press / M-profile                                |
| dimensions   | 12 - 108 mm (DN10 - DN100)                       |

### VSH UltraPress



|              |                          |
|--------------|--------------------------|
| material     | PPSU / brass             |
| suitable for | plastic                  |
| connection   | press / U & TH profile   |
| dimensions   | 14 - 63 mm (DN10 - DN50) |

### VSH Tectite



|              |   |
|--------------|---|
| material     | copper / brass / stainless steel        |
| suitable for | copper / carbon steel / stainless steel |
| connection   | push                                    |
| dimensions   | 10 - 54 mm (DN8 - DN50)                 |

# VSH CoolPress

VSH CoolPress press fittings are suitable for air conditioning, cooling and refrigeration (HVAC, VRV and VRF) up to 48 bar. The VSH CoolPress product range consists of press fittings and tools. The fittings are made of copper and have a specific V-shaped profile. A VSH CoolPress piping system offers installers a safe, fast and easy solution for cooling applications, especially when comparing it to brazing.

## the advantages of VSH CoolPress

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- secure, fast and easy connection technology
- fittings ranging from ¼" to 1¾"
- clearly visible turquoise HNBR o-rings
- laser marking for identification
- professional and appropriate press tools
- installation without open flames or other heat sources

## guaranteed performance

We guarantee a consistent quality and supply, with all fittings being manufactured in Europe. In order to ensure high-value manufacturing, all fittings undergo leak testing. All reducers are made from a single piece so there is no risk of leakage. The fittings have a compact design which has benefits for recessed piping systems. The smooth surface of the fittings and tubes ensure excellent flow characteristics.

## reliable

With VSH CoolPress systems, the quality of the connections is mainly determined by the used tools and not the installer, thereby considerably reducing the risk of errors during installation.

## easy and clean

Compared to other 'cold' connection methods, VSH CoolPress is an extremely user-friendly solution:

- it dispenses the need for complicated fastening techniques, time-consuming preparations and drying times. Installation is fast, clean and needs no lubrication.
- easy insertion of the tube into the fitting due to the special design of the fittings.
- short radius bends ensure compact and space saving installation.
- above features do not require any special installation skills and can be carried out in a pleasant and safe environment.

## safe

The installation of the VSH CoolPress system does not require any heat source (like soldering or brazing) or other heavy or potentially dangerous tools. This makes VSH CoolPress an ideal solution for repairs and renovation projects, as it reduces on site disturbance to a minimum.

## fast

This simple and fast press connection technology and the short tube preparation time result in further considerable savings on installation costs, as connections are achieved only by using press tools.

## insertion depth marking

Safe and secure connections depend on correct insertion depths. For that reason our VSH CoolPress insertion depth marking tool should be used.





**VSH** CoolPress

# technical data



VSH CoolPress

7/8" x 7/8"

48 bar 121°C

1033653

# applications



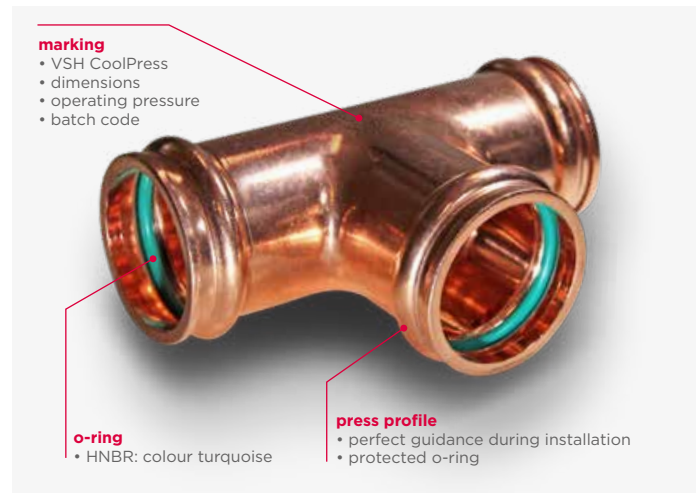
## cooling installations

VSH CoolPress fittings with copper tubes that fulfil EN 12735-1, 12735-2, ASTM B88, ASTM B280

|   |   |
|---|---|
| o-rings:  | HNBR* (turquoise)                                 |
| operating temperature:  | -40°C to +121°C (-40°F to +250°F)                 |
| operating pressure and abnormal pressure (PSI or ASME Class): | 48 bar (700 psi)                                  |
| minimum burst press (PSI or ASME Class):                      | 144 bar (2100 psi)                                |
| helium leak tightness at 20°C at 10 bars:                     | $\leq 7.5 \times 10^{-7} \text{ Pa.m}^3/\text{s}$ |
| vacuum pressure capability:                                   | < 200 microns                                     |

# fittings

## technical characteristics



**marking**

- VSH CoolPress
- dimensions
- operating pressure
- batch code

**o-ring**

- HNBR: colour turquoise

**press profile**

- perfect guidance during installation
- protected o-ring

VSH CoolPress fittings are produced from Cu-DHP (CW024A), copper fitted with a turquoise HNBR o-ring as standard.

## approved refrigerants

| ASHRAE 34 safety group | refrigerants  |
|------------------------|---|
| A1                     | R-134a, R-404A, R-407A, R-407B, R-407C, R-407F, R-407G, R-407H, R-410A, R-427A, R-448A, R-449A, R-449B, R-449C, R-450A, R-452A, R-452C, R-513A, R-513B, R-718 |
| A2L                    | R-452B*, R-32*, R-454A*, R-454B*, R-454C*, R-1234yf*, R-1234ze*   |
| A3                     | R-290*, R-600*, R-600A*   |

\* UL approved but not listed

**Note:** the installer is responsible for the correct use of refrigerants with different safety classifications (A2/A2L & A3). All applicable standards, local regulations and safety guidelines must be strictly observed. Don't use with refrigerants that are not mentioned in the list above.

## compatible oils

POE, PAO, PVE, PAG, AB and MO.

## approvals & standards

VSH CoolPress refrigerant fittings are approved and listed according to UL standard UL207, file SA46302.

**UL207**

- fatigue test

**UL109**

- pull test
- vibration test

**UL1963**

- gasket & seal tests

**ASTM G85**

- annex A3 (seawater acidified test)

**ISO 14903**

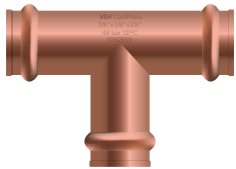
- 7.4 tightness test
- 7.6 pressure-temperature vibration test
- 7.8 freezing test
- 7.10 vacuum test

\* Hydrogenated Nitrile Butadiene Rubber

# tubes

## markings

### VSH CoolPress Copper



| marking                    | packaging label |
|----------------------------|-----------------|
| VSH CoolPress              | type COP...     |
| 48 bar                     | dimensions      |
| dimensions                 | description     |
| batch code                 | EAN no.         |
| max. operating temperature | art. no.        |
|                            | approvals       |
|                            | quantity        |

## o-rings

The VSH CoolPress fittings are equipped with turquoise coloured HNBR o-rings, suitable and approved for cooling applications. The distinctive turquoise color ensures easy identification of fittings from the VSH CoolPress range.

### HNBR - turquoise



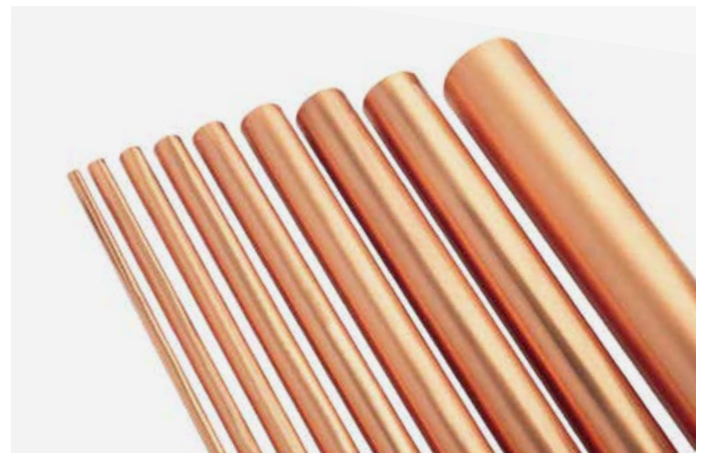
| temperature     | applications                 |
|-----------------|------------------------------|
| -40°C to +121°C | air conditioning             |
|                 | cooling                      |
|                 | refrigeration                |
|                 | heat pump (refrigerant side) |
|                 | VRF/VRV                      |

## storage

Since the o-rings in VSH CoolPress fittings are lubricated during production, it is important to prevent them from drying out. Storing the fittings in their original packaging protects them from dirt and direct sunlight.

## copper tubes

Copper tubes that may be used for VSH CoolPress piping systems are tubes according to the standards ASTM B88, ASTM B280, EN 12735-1 and EN 12735-2 that can be found in the table below.



## compatible copper tubes according to ASTM B88 - ASTM B280 - EN 12735-1 - EN 12735-2

| VSH CoolPress dimensions | nominal tube OD |       | nominal wall thickness dimensions |       |       |       |       |       |       |       |       |       |       |       |       |
|--------------------------|-----------------|-------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                          | [inch]          | [mm]  | 0.030                             | 0.031 | 0.032 | 0.035 | 0.039 | 0.040 | 0.042 | 0.045 | 0.049 | 0.049 | 0.050 | 0.055 | 0.065 |
|                          |                 |       | 0.76                              | 0.80  | 0.81  | 0.89  | 1.00  | 1.02  | 1.07  | 1.14  | 1.24  | 1.25  | 1.27  | 1.40  | 1.65  |
| 1/4"                     | 1/4"            | 6.35  | ●                                 | ●     |       |       | ●●    |       |       |       |       |       |       |       |       |
| 3/8"                     | 3/8"            | 9.53  |                                   |       | ●     | ●●    | ●●    |       |       |       |       |       |       |       |       |
| 1/2"                     | 1/2"            | 12.70 |                                   |       | ●     | ●●    | ●●    |       |       |       | ●●    |       |       |       |       |
| 5/8"                     | 5/8"            | 15.88 |                                   |       |       | ●     | ●●    | ●●    |       |       | ●●    |       |       |       |       |
| 3/4"                     | 3/4"            | 19.05 |                                   |       |       | ●     | ●●    |       | ●●    |       | ●●    |       |       |       |       |
| 7/8"                     | 7/8"            | 22.23 |                                   |       |       |       |       |       |       | ●●    |       | ●     |       |       | ●●    |
| 1"                       | 1"              | 25.40 |                                   |       |       |       | ●     |       |       |       |       |       |       |       |       |
| 1 1/8"                   | 1 1/8"          | 28.58 |                                   |       |       |       |       |       |       |       |       |       | ●     |       | ●     |
| 1 3/8"                   | 1 3/8"          | 34.93 |                                   |       |       |       |       |       |       |       |       |       |       | ●     | ●     |

● soft (R220) ● half hard (R250), hard (R290)



## press tools

A press tool set consists of a press machine and corresponding press jaws or slings. The press machine can either be powered by battery or by mains. The correct sized jaws and slings must be used for each tube diameter used in the system in order to achieve a perfect connection. All VSH CoolPress fittings with diameter from ¼" to 1⅜" mm can be pressed using the appropriate press tools listed in our product range. Please use the correct profile jaws or slings that correspond to the diameter to be installed. A special adapter may also be required for the diameter 1⅜" in addition to the press slings.

Correct pressing is guaranteed when the press tools are used correctly. Regular maintenance and lubrication of the press jaws, slings and tools are necessary. Please take notice of the manufacturer's instructions for usage and maintenance.

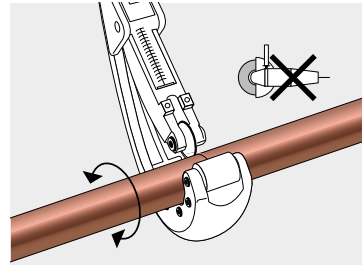
The following tools are approved and released by Aalberts integrated piping systems:

| Press tool       | Jaws/slings  |
|------------------|--|
| Novopress ACO103 | VSH CoolPress/Novopress jaws PB1, dimension ¼"-1½"   |
| Novopress ACO203 | VSH CoolPress/Novopress jaws Ecotec PB2, dimension ¼"-1½"<br>VSH CoolPress/Novopress sling 1⅜" and adapter ZB203 |
| Novopress ACO103 | Rothenberger >B< MaxiPro jaws for 19 kN tools ¼"-1½"   |
| Novopress ACO203 | Rothenberger >B< MaxiPro jaws for 32 kN tools ¼"-1½"<br>Rothenberger >B< MaxiPro sling 1⅜" and adapter ZBS1      |
| Romax Compact TT | Rothenberger >B< MaxiPro jaws for 19 kN tools ¼"-1½"   |
| Romax 3000/4000  | Rothenberger >B< MaxiPro jaws for 32 kN tools ¼"-1½"<br>Rothenberger >B< MaxiPro sling 1⅜" and adapter ZBS1      |

More information about these tools can be obtained through our online tool selector: [www.aalberts-ips.eu/tool-selector](http://www.aalberts-ips.eu/tool-selector).

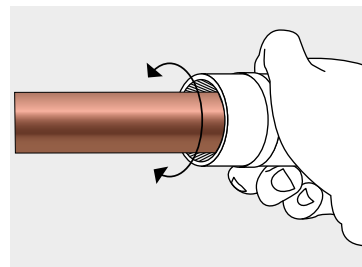
## installation guidelines

### 1. cut the tube to length



After measuring, the tube can be cut to length using a rotary tube cutter for the tube material. The tube must always be cut completely through. Never partially cut the tube and break it off as this could cause corrosion.

### 2. prepare tube end



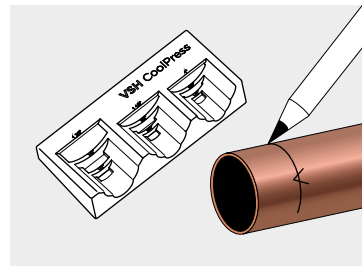
The tube ends must be carefully and thoroughly deburred inside and out in order to avoid any damage to the o-ring when inserting the tube into the fitting. Deburring the inside of tubes prevents pitting and corrosion. A suitable hand

deburrer may be used for both inside and outside of the tube, a pencil type deburrer can be used for the internal tube edges. Remove any burrs and dirt sticking to the tube.

### clean and check for defects

After cutting, clean and smoothen the tube end using a fine, abrasive hand pad to remove dirt, oxidation, debris and scratches. After cleaning, the tube end should have a bright and shiny appearance. Always ensure the tube end is cut off square, without scratches and supplier markings. Make sure the tube end keeps its perfect round shape. In case of any imperfection, the tube must be cut and prepared again (deburring, cleaning, smoothing).

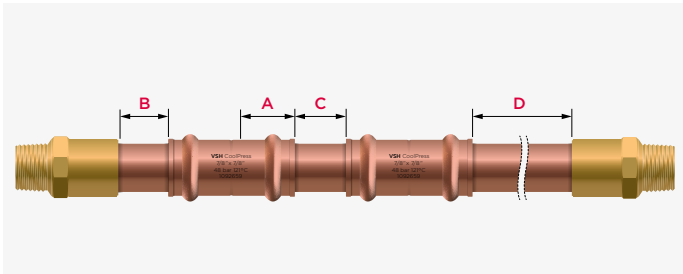
### 3. mark insertion depth



The required insertion depth must be marked on the tube using the VSH CoolPress insertion depth marker. The pressing operation is of crucial importance for the tensile strength, which can only be achieved by correctly installation.

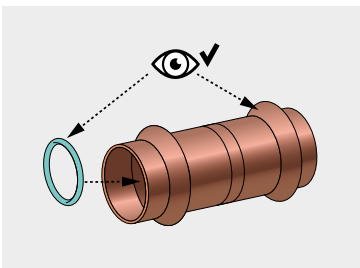
The marking on the tube must remain visible (but as close as possible to the fitting) to identify any movement before or after pressing.

minimum distance between pressings



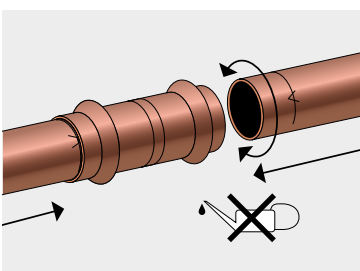
| nominal size [inch] | insertion depth A [mm] | minimum distance from a brazed point B [mm] | minimum distances between pressings and insertion depth C [mm] | minimum distances when brazing D [mm] |
|---------------------|------------------------|---|--|---------------------------------------|
| 1/4"                | 18                     | 10  | 10   | 250                                   |
| 3/8"                | 18                     | 10  | 10   | 300                                   |
| 1/2"                | 17,5                   | 15  | 15   | 350                                   |
| 5/8"                | 21                     | 15  | 15   | 450                                   |
| 3/4"                | 22                     | 20  | 20   | 500                                   |
| 7/8"                | 23,5                   | 20  | 20   | 600                                   |
| 1"                  | 24                     | 25  | 25   | 650                                   |
| 1 1/8"              | 25,5                   | 25  | 25   | 700                                   |
| 1 1/2"              | 34                     | 35  | 35   | 900                                   |

4. check fitting



Before assembly, the fitting must be checked to ensure that the o-rings are present and correctly positioned. The tube, fitting and o-ring must be examined for any foreign materials (e.g. dirt, burrs), which must be removed, if present.

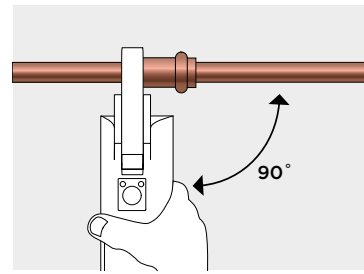
5. assemble tube to fitting



Insert the tube carefully into the fitting up to the marked insertion depth, simultaneously rotating and pushing it in the direction of the axis. The insertion depth marking must remain visible. Rough and careless insertion of the tube into the fitting may

result in damage to the o-ring and is therefore not permitted. To optimize installation, time may be saved by assembling a number of connections first and then pressing the various connections one by one afterwards. Marking the insertion depth (A) provides a check that the tube has not been pushed out of the fitting during pressing. It is also important to check that the minimum required installation distances are met before starting the final pressing process of the various connections.

6. pressing

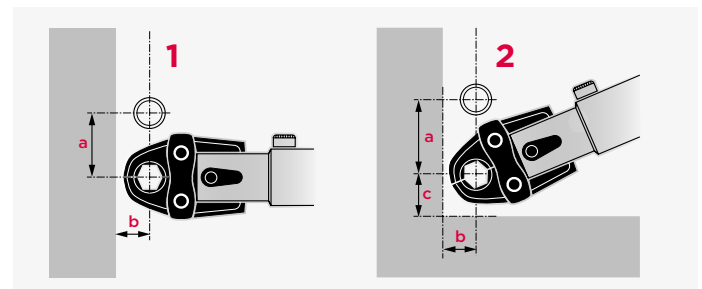


Before pressing, the press jaws and slings must be checked for dirt, which must be removed if present. Furthermore, the press machine must be in good condition and the manufacturer's instructions for operating the device,

maintenance must be observed. Also make sure that the correct press jaws and slings for the application are used. In order to create a correctly pressed connection, the groove of the press tool must enclose the press fitting o-ring bead. Once pressing has started, always complete the press cycle and under no circumstances interrupt the process. It is not permitted to press a connection more than once.

required installation space

The table below gives the minimum required installation space so that pressing can be carried out correctly using the appropriate press tools. These distances relate to the general installation configurations that are schematically depicted in figures 1 and 3.

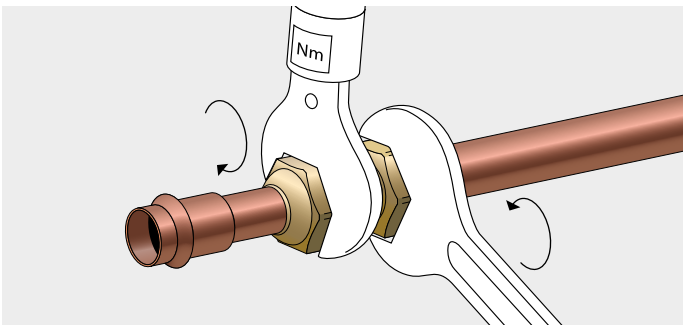
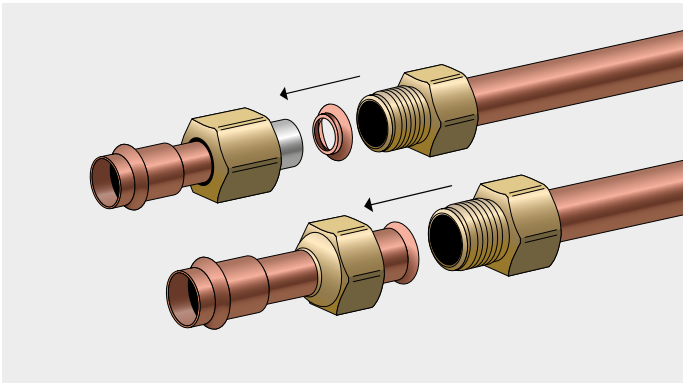


| tube Ø outside [inch] | fig. 1 |    | fig. 2 |    |    |
|-----------------------|--------|----|--------|----|----|
|                       | a      | b  | a      | b  | c  |
| 1/4"                  | 60     | 30 | 100    | 50 | 50 |
| 3/8"                  | 60     | 30 | 105    | 50 | 50 |
| 1/2"                  | 60     | 30 | 110    | 50 | 50 |
| 5/8"                  | 60     | 30 | 110    | 50 | 50 |
| 3/4"                  | 60     | 30 | 110    | 50 | 50 |
| 7/8"                  | 60     | 35 | 120    | 60 | 60 |
| 1"                    | 60     | 35 | 120    | 60 | 60 |
| 1 1/8"                | 60     | 35 | 120    | 60 | 60 |
| 1 1/2"                | 60     | 35 | 120    | 60 | 60 |

minimal needed installation space

# general technical information

## 7. flare couplings



Align the center of both flares and tighten by hand. Apply a refrigeration-grade gasket or thread sealant to the inner surface of the flare and copper washer (COP5359SAL/SAI). Do not apply lubricating oil or sealant to the outside threads and inside threads of the nut to avoid overtightening. A high viscosity refrigerant grade oil may be used if sealant is not available.

Install the flare couplings, using the torque as described in the table. Do not over tighten. Always install in accordance with local regulations, legislation and codes of practice.

| dimension [inch] | Nm     | ft. lbs |
|------------------|--------|---------|
| ¼                | 11-14  | 9-10    |
| ⅜                | 20-34  | 15-25   |
| ½                | 34-47  | 25-34   |
| ⅝                | 54-75  | 40-55   |
| ¾                | 68-110 | 51-81   |

flare couplings required torques

## thermal expansion

The level of thermal expansion within piping systems depends on the tube material, tube length and temperature deviations. This expansion needs to be taken into account during the installation. Small changes in length can be accommodated by calculating adequate space for expansion as well as through the elastic properties of the piping system itself. More substantial changes in length need to be offset by other methods like installation of special expansion compensation devices, fixed anchoring points and brackets. Expansion can also be compensated by the using tube segments or U-bends. The level of expansion to be compensated can be predetermined by calculating the changes in length using the following formula:

$$\Delta l = l \times \alpha \times \Delta T$$

- $\Delta l$  = total thermal expansion [mm]
- $l$  = length of the segment in question [m]
- $\Delta T$  = temperature difference [K]
- $\alpha$  = thermal expansion coefficient for copper tube = 0.0170 mm/mK

The following table show the expansion of various tubes.

| l[m] | ΔT[K] |       |       |       |       |       |       |       |
|------|-------|-------|-------|-------|-------|-------|-------|-------|
|      | 30    | 40    | 50    | 60    | 70    | 80    | 90    | 100   |
| 0,1  | 0,05  | 0,07  | 0,08  | 0,10  | 0,12  | 0,13  | 0,15  | 0,17  |
| 0,2  | 0,10  | 0,13  | 0,17  | 0,20  | 0,24  | 0,27  | 0,30  | 0,34  |
| 0,3  | 0,15  | 0,20  | 0,25  | 0,30  | 0,35  | 0,40  | 0,45  | 0,50  |
| 0,4  | 0,20  | 0,27  | 0,34  | 0,40  | 0,47  | 0,54  | 0,60  | 0,67  |
| 0,5  | 0,25  | 0,34  | 0,42  | 0,50  | 0,59  | 0,67  | 0,76  | 0,84  |
| 0,6  | 0,30  | 0,40  | 0,50  | 0,60  | 0,71  | 0,81  | 0,91  | 1,01  |
| 0,7  | 0,35  | 0,47  | 0,59  | 0,71  | 0,82  | 0,94  | 1,06  | 1,18  |
| 0,8  | 0,40  | 0,54  | 0,67  | 0,81  | 0,94  | 1,08  | 1,21  | 1,34  |
| 0,9  | 0,45  | 0,60  | 0,76  | 0,91  | 1,06  | 1,21  | 1,36  | 1,51  |
| 1    | 0,50  | 0,67  | 0,84  | 1,01  | 1,18  | 1,34  | 1,51  | 1,68  |
| 2    | 1,01  | 1,34  | 1,68  | 2,02  | 2,35  | 2,69  | 3,02  | 3,36  |
| 3    | 1,51  | 2,02  | 2,52  | 3,02  | 3,53  | 4,03  | 4,54  | 5,04  |
| 4    | 2,02  | 2,69  | 3,36  | 4,03  | 4,70  | 5,38  | 6,05  | 6,72  |
| 5    | 2,52  | 3,36  | 4,20  | 5,04  | 5,88  | 6,72  | 7,56  | 8,40  |
| 6    | 3,02  | 4,03  | 5,04  | 6,05  | 7,06  | 8,06  | 9,07  | 10,08 |
| 10   | 5,04  | 6,72  | 8,40  | 10,08 | 11,76 | 13,44 | 15,12 | 16,80 |
| 15   | 7,56  | 10,08 | 12,60 | 15,12 | 17,64 | 20,16 | 22,68 | 25,20 |
| 20   | 10,08 | 13,44 | 16,80 | 20,16 | 23,52 | 26,88 | 30,24 | 33,60 |
| 25   | 12,60 | 16,80 | 21,00 | 25,20 | 29,40 | 33,60 | 37,80 | 42,00 |

total thermal expansion Δl [mm] for copper tube

If the expansion is greater than the piping system is able to absorb without the tension becoming too high, additional measures must be taken, such as the use of expansion compensators, expansion loops or u-bends.



In all piping systems carrying refrigerant, the number of connections must be reduced to a minimum. In general, when installing such systems, the following standards must be observed in addition to legal requirements:

- **EN 378-2:** Refrigerating systems and heat pumps – safety and environmental requirements – Part 2: Design, construction, testing, marking, and documentation
- **EN ISO 14903:2017-12:** Refrigerating systems and heat pumps – Qualification of tightness of components and joints
- **EN 14276-2:2020:** Pressure equipment for refrigerating systems and heat pumps – Part 2: In addition to general installation according to applicable standards, the following sections of EN 378-2 must be observed: Accessibility of the piping system after installation must be ensured according to Section 6.2.3.3.7 of EN 378-2.

### fastening

All refrigerant-carrying piping systems must be properly fastened using supports suitable for the application. In addition to generally accepted engineering practices, the EN 378-2\* requirements must be observed.

### protection

All refrigerant-carrying piping systems must be professionally protected against external influences using suitable means for this application. Suitable protection must be provided against contact with corrosive building materials. In addition to generally accepted engineering practices, the EN 378-2\* requirements must be observed.

### identification and insulation

all refrigerant-carrying piping systems must be properly marked and provided with suitable insulation materials for the respective application area. In addition to the generally accepted rules of technology, the EN 378-2\* requirements must be observed.

### equipotential bonding

VSH CoolPress is electrically conductive, guaranteeing reliable potential equalization.

### testing and commissioning

The testing and commissioning of air-conditioning and refrigeration systems must be carried out in accordance with the requirements of the following standards and regulations:

- EN 378-2:2016 – Refrigerating systems and heat pumps: Safety and environmental requirements – Part 2: Design, construction, testing, marking and documentation
- Regulation (EU) No. 517/2014 on fluorinated greenhouse gases In addition, all local regulations, ordinances, and specific installation guidelines must be observed.

### system pressure testing

Testing devices must be regularly serviced and calibrated. A suitable thread sealant should be used at test connections to prevent leaks at joints. Small, low volume systems respond faster to pressure changes; however, they are not necessarily an indication of leakage.

For leak and strength tests, use dry, oxygen-free nitrogen (OFN), as it is inert. Oxygen must not be used for pressure testing, as it can react violently under pressure with hydrocarbons (oil and grease), which can lead to explosions and fire. The maximum test pressure must be determined by the installer and calculated based on the system pressure and test parameters.

To ensure the safety of VSH CoolPress fittings during strength and leak testing, the pressure should be gradually increased to the specified test pressure. Leak testing must be carried out according to Section 6.3.3.1 of the standard EN 378-2.

### evacuation of the piping system

Remove air, moisture, and non-condensable gases before filling. When vacuum cannot be maintained, check the correct functioning of the vacuum pump. Possible causes can be leaking joints, moisture in the system or pump problems.

### pressure test over a longer period (>24 h)

record the system pressure and ambient temperature at the start and at the end of the test. Note: temperature rise can mask leaks (5°C = 0.7 bar pressure change).

When vacuum cannot be maintained:

- check for leaks at connections or test ports; use sealing paste if necessary.
- inspect the piping system for leaks; ultrasonic devices can help.
- extend evacuation time if moisture or refrigerant residues remain in compressor oil.
- conduct a comprehensive fault diagnosis before taking further measures (e.g., cutting out fittings).

### NOTE!

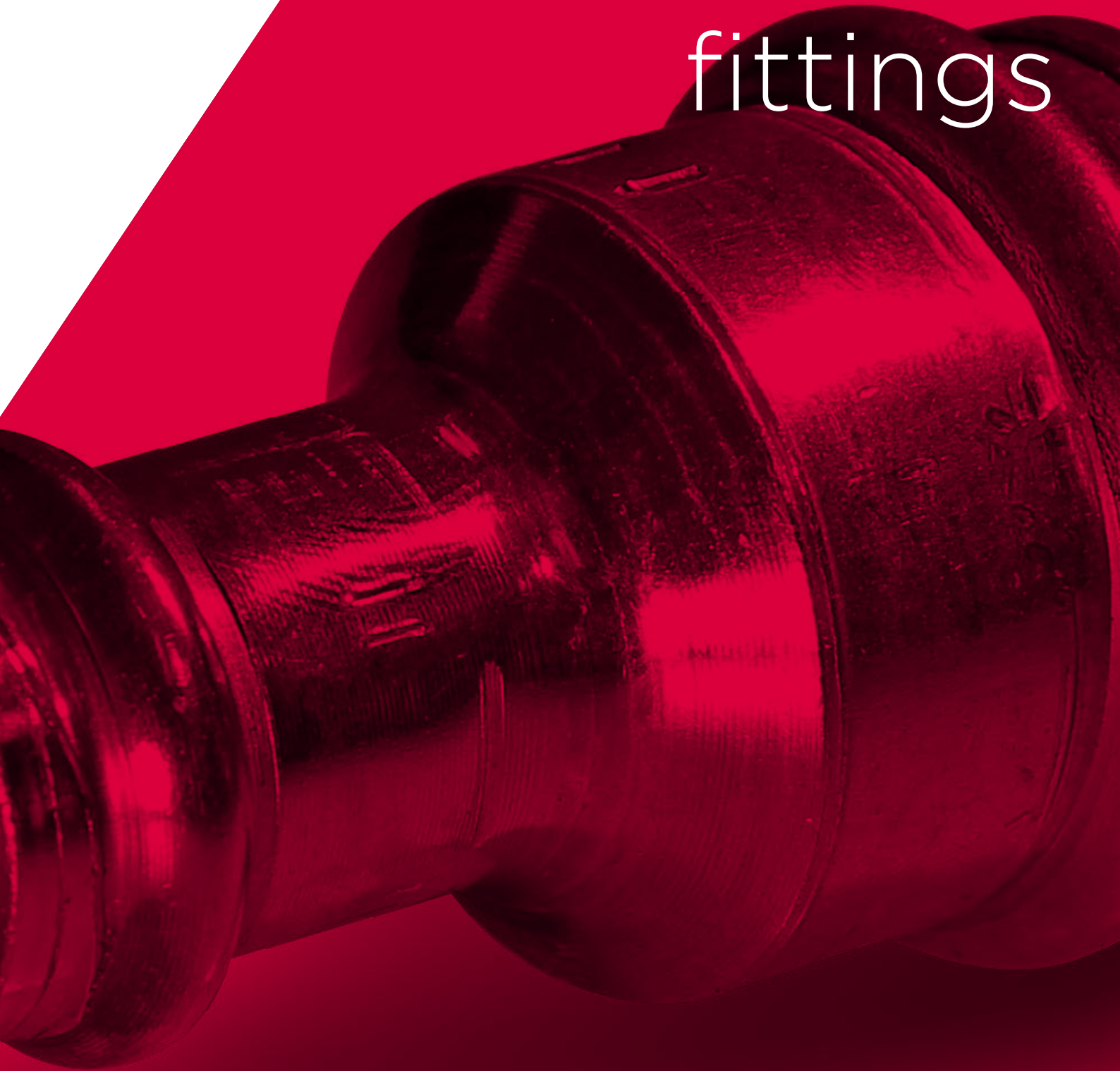
Do not install VSH CoolPress fittings too close to the filling valve, as the temperature may drop below -40°C during filling.

\* EN 378-2:2016: refrigerating systems and heat pumps – Safety and environmental requirements – Part 2: Design, construction, testing, marking, and documentation



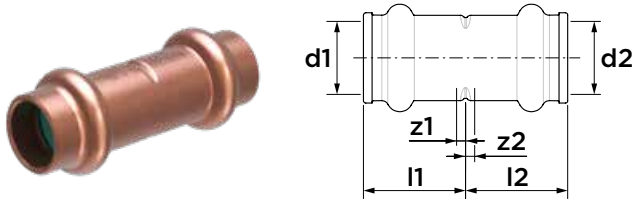
VSH CoolPress

fittings



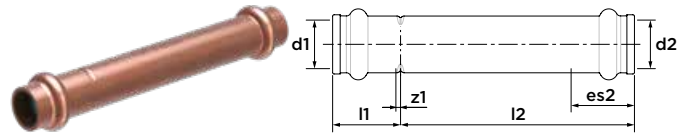


**COP5270 straight coupling**  
(2 x press)



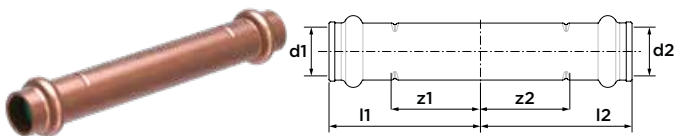
| dimension | article no. | l1/l2 | z1/z2 |
|-----------|-------------|-------|-------|
| ¼"        | 123461617   | 20    | 2     |
| ⅜"        | 123461618   | 20    | 2     |
| ½"        | 123461619   | 19    | 2     |
| ⅝"        | 123461620   | 22    | 1     |
| ¾"        | 123461621   | 23    | 1     |
| ⅞"        | 123461622   | 26    | 2     |
| 1"        | 123461623   | 25    | 2     |
| 1 ⅛"      | 123461624   | 27    | 2     |
| 1 ½"      | 123461625   | 36    | 2     |

**COP5275 slip coupling**  
(2 x press)



| dimension | article no. | l1 | l2 | z1 | es2 |
|-----------|-------------|----|----|----|-----|
| ¼"        | 123461626   | 19 | 71 | 2  | 18  |
| ⅜"        | 123461627   | 19 | 71 | 2  | 18  |
| ½"        | 123461628   | 19 | 71 | 2  | 18  |
| ⅝"        | 123461629   | 22 | 78 | 1  | 21  |
| ¾"        | 123461630   | 23 | 77 | 1  | 22  |
| ⅞"        | 123461631   | 25 | 79 | 2  | 24  |
| 1"        | 123461632   | 24 | 80 | 2  | 24  |
| 1 ⅛"      | 123461633   | 26 | 78 | 2  | 26  |
| 1 ½"      | 123461634   | 35 | 65 | 2  | 34  |

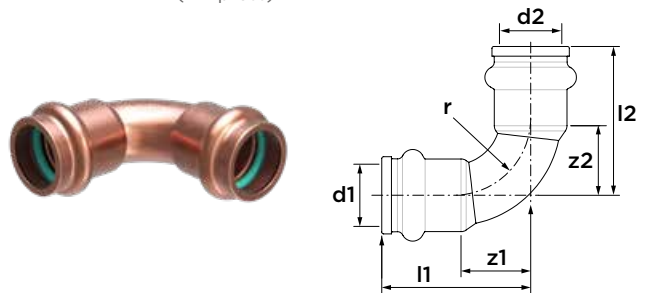
**COP5270L straight coupling long**  
(2 x press)



| dimension | article no. | l1/l2 | z1/z2 |
|-----------|-------------|-------|-------|
| ¼"        | 123461665   | 46    | 28    |
| ⅜"        | 123461666   | 45    | 27    |
| ½"        | 123461667   | 45    | 28    |
| ⅝"        | 123461668   | 50    | 29    |
| ¾"        | 123461669   | 50    | 28    |
| ⅞"        | 123461670   | 52    | 28    |
| 1"        | 123461671   | 52    | 29    |
| 1 ⅛"      | 123461672   | 53    | 28    |

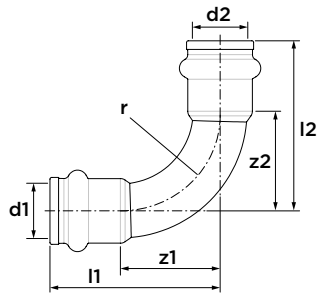
\*UL approval pending for all dimensions

**COP5002 bend 90°**  
(2 x press)



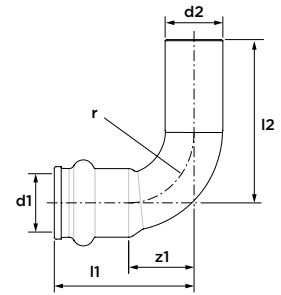
| dimension | article no. | l1/l2 | z1/z2 | r  |
|-----------|-------------|-------|-------|----|
| ¼"        | 123461555   | 33    | 15    | 12 |
| ⅜"        | 123461556   | 34    | 16    | 12 |
| ½"        | 123461557   | 32    | 15    | 16 |
| ⅝"        | 123461558   | 39    | 18    | 20 |
| ¾"        | 123461559   | 42    | 20    | 24 |
| ⅞"        | 123461560   | 49    | 25    | 28 |
| 1"        | 123461561   | 53    | 30    | 32 |
| 1 ⅛"      | 123461562   | 58    | 33    | 34 |
| 1 ½"      | 123461563   | 69    | 35    | 42 |

**COP5002L long bend 90°**  
(2 x press)



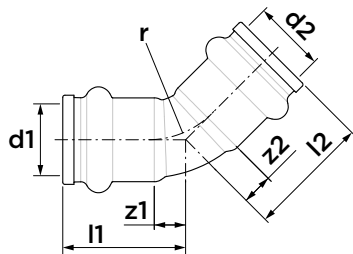
| dimension | article no. | l1/l2 | z1/z2 | r  |
|-----------|-------------|-------|-------|----|
| 1/2"      | 123461673   | 44    | 26    | 26 |
| 5/8"      | 123461674   | 51    | 30    | 29 |
| 3/4"      | 123461675   | 56    | 34    | 34 |
| 7/8"      | 123461676   | 67    | 43    | 42 |
| 1 1/8"    | 123461677   | 78    | 53    | 55 |
| 1 3/8"    | 123461678   | 90    | 56    | 55 |

**COP5001 bend 90°**  
(press x male)



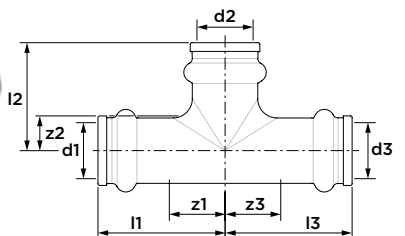
| dimension | article no. | l1 | l2 | z1 | r  |
|-----------|-------------|----|----|----|----|
| 3/8"      | 123461564   | 34 | 39 | 16 | 12 |
| 1/2"      | 123461565   | 32 | 35 | 15 | 16 |
| 5/8"      | 123461566   | 39 | 45 | 18 | 20 |
| 3/4"      | 123461567   | 43 | 49 | 21 | 24 |
| 7/8"      | 123461568   | 50 | 57 | 26 | 28 |
| 1"        | 123461569   | 52 | 60 | 29 | 32 |
| 1 1/8"    | 123461570   | 58 | 64 | 33 | 34 |
| 1 3/8"    | 123461571   | 69 | 81 | 35 | 42 |

**COP5041 bend 45°**  
(2 x press)



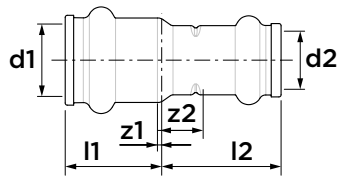
| dimension | article no. | l1/l2 | z1/z2 | r  |
|-----------|-------------|-------|-------|----|
| 1/4"      | 123461572   | 25    | 7     | 12 |
| 3/8"      | 123461573   | 27    | 9     | 12 |
| 1/2"      | 123461574   | 25    | 7     | 16 |
| 5/8"      | 123461575   | 29    | 8     | 20 |
| 3/4"      | 123461576   | 32    | 10    | 24 |
| 7/8"      | 123461577   | 34    | 10    | 28 |
| 1"        | 123461578   | 37    | 13    | 32 |
| 1 1/8"    | 123461579   | 40    | 14    | 34 |
| 1 3/8"    | 123461580   | 45    | 11    | 42 |

**COP5130 tee**  
(3 x press)



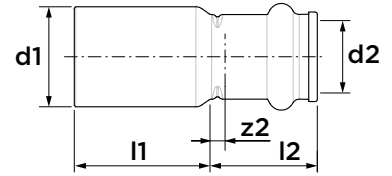
| dimension | article no. | l1/l3 | l2 | z1/z3 | z2 |
|-----------|-------------|-------|----|-------|----|
| 1/4"      | 123461649   | 27    | 23 | 9     | 5  |
| 3/8"      | 123461650   | 31    | 31 | 13    | 13 |
| 1/2"      | 123461651   | 34    | 29 | 17    | 12 |
| 5/8"      | 123461652   | 38    | 32 | 17    | 11 |
| 3/4"      | 123461653   | 42    | 35 | 20    | 13 |
| 7/8"      | 123461654   | 43    | 38 | 19    | 14 |
| 1"        | 123461655   | 46    | 41 | 23    | 18 |
| 1 1/8"    | 123461656   | 48    | 43 | 23    | 18 |
| 1 3/8"    | 123461657   | 55    | 54 | 21    | 20 |

**COP5240 reducer**  
(2 x press)



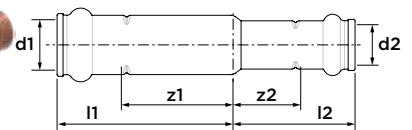
| dimension       | article no. | l1 | l2 | z1 | z2 |
|-----------------|-------------|----|----|----|----|
| 3/8" x 1/4"     | 123461581   | 19 | 23 | 1  | 5  |
| 1/2" x 1/4"     | 123461582   | 19 | 29 | 1  | 11 |
| 1/2" x 3/8"     | 123461583   | 19 | 26 | 1  | 8  |
| 5/8" x 1/4"     | 123461584   | 22 | 30 | 1  | 12 |
| 5/8" x 3/8"     | 123461585   | 22 | 28 | 1  | 10 |
| 5/8" x 1/2"     | 123461586   | 22 | 26 | 1  | 9  |
| 3/4" x 3/8"     | 123461587   | 23 | 32 | 1  | 14 |
| 3/4" x 1/2"     | 123461588   | 23 | 29 | 1  | 12 |
| 3/4" x 5/8"     | 123461589   | 23 | 27 | 1  | 6  |
| 7/8" x 1/2"     | 123461590   | 25 | 30 | 1  | 13 |
| 7/8" x 3/8"     | 123461591   | 25 | 32 | 1  | 11 |
| 7/8" x 1/4"     | 123461592   | 25 | 27 | 1  | 5  |
| 1" x 3/4"       | 123461593   | 24 | 33 | 1  | 11 |
| 1 1/8" x 5/8"   | 123461594   | 27 | 32 | 1  | 11 |
| 1 1/8" x 3/4"   | 123461595   | 27 | 33 | 1  | 11 |
| 1 1/8" x 7/8"   | 123461596   | 27 | 35 | 1  | 11 |
| 1 1/8" x 1"     | 123461597   | 27 | 34 | 1  | 11 |
| 1 3/8" x 7/8"   | 123461598   | 35 | 39 | 1  | 17 |
| 1 3/8" x 1"     | 123461599   | 35 | 36 | 1  | 13 |
| 1 3/8" x 1 1/8" | 123461600   | 35 | 35 | 1  | 10 |

**COP5243 reducer**  
(press x male)



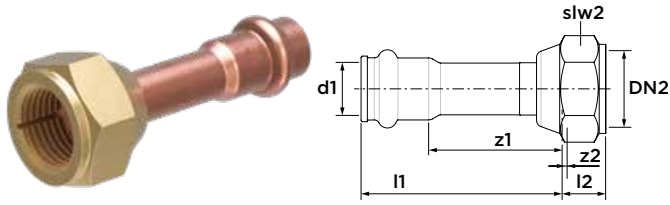
| dimension       | article no. | l1 | l2 | z2 |
|-----------------|-------------|----|----|----|
| 3/8" x 1/4"     | 123461601   | 21 | 23 | 5  |
| 1/2" x 3/8"     | 123461602   | 21 | 23 | 5  |
| 5/8" x 3/8"     | 123461603   | 24 | 26 | 8  |
| 5/8" x 1/2"     | 123461604   | 24 | 23 | 6  |
| 3/4" x 1/2"     | 123461605   | 25 | 25 | 8  |
| 3/4" x 5/8"     | 123461606   | 25 | 25 | 4  |
| 3/4" x 1/2"     | 123461607   | 27 | 28 | 11 |
| 7/8" x 5/8"     | 123461608   | 27 | 27 | 6  |
| 7/8" x 3/4"     | 123461609   | 27 | 28 | 6  |
| 1 1/8" x 1/2"   | 123461610   | 29 | 35 | 18 |
| 1 1/8" x 5/8"   | 123461611   | 29 | 33 | 12 |
| 1 1/8" x 3/4"   | 123461612   | 29 | 31 | 9  |
| 1 1/8" x 7/8"   | 123461613   | 29 | 31 | 7  |
| 1 1/8" x 7/8"   | 123461614   | 38 | 35 | 11 |
| 1 3/8" x 1"     | 123461615   | 38 | 33 | 10 |
| 1 3/8" x 1 1/8" | 123461616   | 38 | 32 | 7  |

**COP5240L reducer long**  
(2 x press)



| dimension   | article no. | l1 | l2 | z1 | z2 |
|-------------|-------------|----|----|----|----|
| 3/8" x 1/4" | 123461662   | 57 | 44 | 39 | 26 |
| 5/8" x 3/8" | 123461664   | 54 | 49 | 33 | 31 |
| 5/8" x 1/2" | 123461663   | 56 | 39 | 35 | 22 |
| 1" x 5/8"   | 123461661   | 56 | 52 | 33 | 31 |

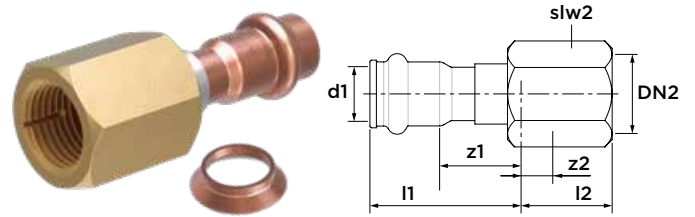
**COP5359SAE flare coupling with bronze nut**  
(press x female threaded union nut)



| dimension | article no. | l1 | l2 | z1 | z2 | slw2 |
|-----------|-------------|----|----|----|----|------|
| 1/4"      | 123461635   | 44 | 9  | 26 | 2  | 17   |
| 3/8"      | 123461636*  | 49 | 11 | 31 | 3  | 22   |
| 1/2"      | 123461637*  | 50 | 14 | 32 | 2  | 24   |
| 5/8"      | 123461638*  | 57 | 17 | 36 | 3  | 27   |
| 3/4"      | 123461639*  | 65 | 20 | 44 | 2  | 32   |

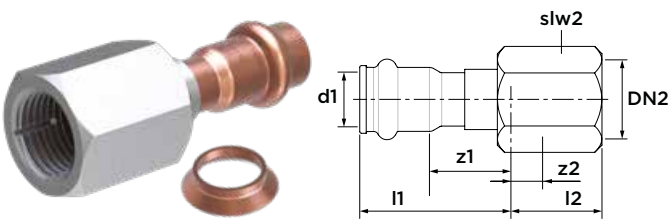
\*UL approval pending

**COP5359SAL flare coupling with bronze nut & copper gasket**  
(press x female threaded union nut)



| dimension | article no. | l1 | l2 | z1 | z2 | slw2 |
|-----------|-------------|----|----|----|----|------|
| 1/4"      | 123461679   | 33 | 15 | 15 | 6  | 17   |
| 3/8"      | 123461680   | 36 | 20 | 18 | 8  | 22   |
| 1/2"      | 123461681   | 38 | 24 | 21 | 9  | 24   |
| 5/8"      | 123461682   | 45 | 27 | 24 | 9  | 27   |
| 3/4"      | 123461683   | 49 | 32 | 28 | 11 | 32   |

**COP5359SAI flare coupling with stainless nut & copper gasket**  
(press x female threaded union nut)



| dimension | article no. | l1 | l2 | z1 | z2 | slw2 |
|-----------|-------------|----|----|----|----|------|
| 1/4"      | 123461684   | 33 | 15 | 15 | 6  | 17   |
| 3/8"      | 123461685   | 36 | 20 | 18 | 8  | 22   |
| 1/2"      | 123461686   | 38 | 24 | 21 | 9  | 24   |
| 5/8"      | 123461687   | 45 | 27 | 24 | 9  | 27   |
| 3/4"      | 123461688   | 49 | 32 | 28 | 11 | 32   |

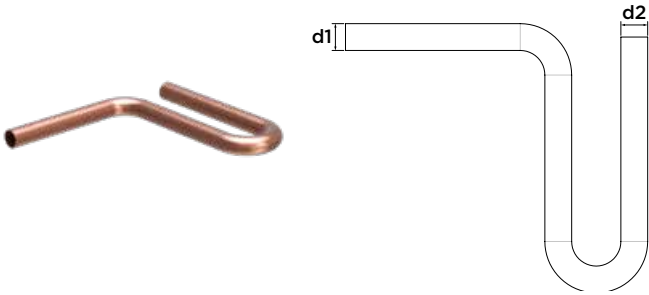
**COP5287 copper flare gasket**  
(for COP5359SAL & COP5359SAI)



| dimension | article no. |
|-----------|-------------|
| 1/2"      | 123461857   |
| 5/8"      | 123461858   |
| 1/2"      | 123461859   |
| 5/8"      | 123461860   |
| 3/4"      | 123461861   |



**COP5698 P-trap**  
(2 x male)



| dimension | article no. |
|-----------|-------------|
| 5/8"      | 123461658   |
| 3/4"      | 123461659   |
| 7/8"      | 123461660   |
| 1 1/8"    | 123461689*  |

\*without UL approval

**COP5301 stop end**  
(1 x press)



| dimension | article no. | l1 | z1 |
|-----------|-------------|----|----|
| 1/4"      | 123461640   | 21 | 3  |
| 3/8"      | 123461641   | 21 | 3  |
| 1/2"      | 123461642   | 20 | 3  |
| 5/8"      | 123461643   | 24 | 3  |
| 3/4"      | 123461644   | 26 | 4  |
| 7/8"      | 123461645   | 27 | 3  |
| 1"        | 123461646   | 26 | 3  |
| 1 1/8"    | 123461647   | 29 | 4  |
| 1 3/8"    | 123461648   | 39 | 5  |

**P5991 press tools Novopress ACO103**



|   | dimension   | article no. |
|---|-------------|-------------|
| ACO103 + 2 batteries 2.0Ah + charger + case | 1/4"-1 1/8" | 6342481     |

**P6013/6014 press tools Novopress ECO203/ACO203(XL)**



|  | dimension   | article no. |
|--|-------------|-------------|
| ECO203 + case                              | 1/4"-1 3/8" | 6342094     |
| ACO203 BT + battery 2.0Ah + charger + case | 1/4"-1 3/8" | 6342490     |

**P6301 Ecotec press jaws PB1**  
(for ACO103)



| dimension | article no. |
|-----------|-------------|
| ¼"        | 123461710   |
| ⅜"        | 123461711   |
| ½"        | 123461712   |
| ⅝"        | 123461713   |
| ¾"        | 123461714   |
| ⅞"        | 123461715   |
| 1"        | 123461716   |
| 1½"       | 123461717   |

**P6302 Ecotec press jaws PB2 & sling**  
(for ACO203)



| dimension | article no. |
|-----------|-------------|
| ¼"        | 123461718   |
| ⅜"        | 123461719   |
| ½"        | 123461720   |
| ⅝"        | 123461721   |
| ¾"        | 123461722   |
| ⅞"        | 123461723   |
| 1"        | 123461724   |
| 1½"       | 123461725   |
| 1¾"       | 123461726*  |
| ZB203     | 6340829     |

\*sling 1¾" with adapter ZB203

**P6303 insertion depth marking tool**



| dimension | article no. |
|-----------|-------------|
| ¼" - 1½"  | 123461727   |



**disclaimer:**

*The technical data are non-binding and do not reflect the warranted characteristics of the products. They are subject to change. Please consult our General Terms and Conditions. Additional information is available upon request. It is the designer's responsibility to select products suitable for the intended purpose and to ensure that pressure ratings and performance data are not exceeded. The installation instructions should always be read and followed. The system must always be depressurized and drained before any components, whether defective or otherwise, are removed, modified or corrected.*



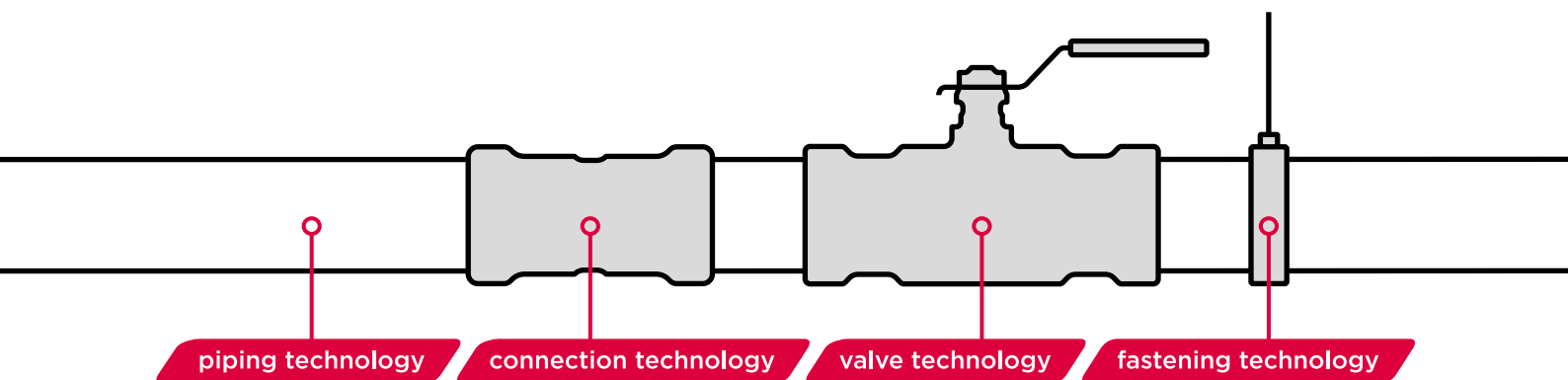
more information?

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